1. (currently amended) A speech encoder, comprising:

  (a) a linear prediction, pitch, and, voicing analyzer;

  (b) a waveform coder coupled to said analyzer, with LP coefficients updated within a sub-frame for excitation synthesis.

2. (new) The speech encoder of claim 1, wherein:

  (a) said sub-frame has a length equal to an integer multiple of a length of an interval of said LP coefficients update.

3. (new) The speech encoder of claim 2, wherein:

  (a) said sub-frame has a length of 80 samples; and

  (b) said LP coefficient updated interval is 20 samples.

4. (new) A method of speech encoding, comprising the steps of:

  (a) providing waveform excitation sub-frames;

  (b) providing a plurality of sets of LP coefficients for each of said sub-frames; and

  (c) finding waveform excitations for said sub-frames using said sets of LP coefficients.

5. (new) The method of claim 4, wherein:

  (a) said sub-frames have length 80 samples; and

  (b) said sets of LP coefficients apply to intervals of length 20 samples.